IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF OKLAHOMA

STATE OF OKLAHOMA,	)	
	)	
Plaintiff,	)	
	)	
v.	)	**Case No. 05-cv-329-GKF(PJC)**
	)	
TYSON FOODS, INC., et al.,	)	
	)	
Defendants.	)	

THE STATE OF OKLAHOMA'S RESPONSE TO DEFENDANTS' MOTION TO EXCLUDE THE TESTIMONY OF TODD KING PURSUANT TO *DAUBERT V. MERRELL DOW PHARMACEUTICALS, INC.* [DKT # 2068]

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Plaintiff, the State of Oklahoma ("the State"), respectfully requests that "Defendants' Motion to Exclude the Testimony of Todd King Pursuant to *Daubert v. Merrell Dow Pharmaceuticals, Inc.* [DKT #2068]" be denied in its entirety.

I. Introductory Statement

Defendants' Motion to Exclude the Testimony of Todd King (hereinafter "Motion") is seriously flawed in numerous respects. The Motion severely mischaracterizes the nature, scope and purpose of Mr. King's expert report, as well as his opinions and deposition testimony in this case. Defendants then argue against those mischaracterizations as a basis for excluding Mr. King's testimony.

II. Mr. King's Qualifications and Opinions

Todd King is a chemical and environmental engineer with over 22 years experience in a variety of wastewater, air, and hazardous waste management projects for state, industry and municipalities. *See* Exhibit 1, p.1. He has served in a full range of engineering roles from project manager to resident, design, and construction engineer for various municipal and private-sector environmental projects. *Id.*

He has worked on water quality issues, including serving as Officer-In-Charge for the U.S. National Wet Weather Demonstration Project on the Rouge River, which included evaluation of the effectiveness of best management practices, bank stabilization, as well as remedial options, and the Rouge River TMDL to address *e. Coli* resulting from combined sewer overflows and nonpoint source pollution that make the water unsafe for body contact. *Id.*; Defendants' Exhibit 1, pp. 9-10. He has also worked on numerous sites with contaminated sediments, rivers and dams, including serving as the Lead Practitioner for developing polychlorinated biphenyls remedial actions and technical cost assessments; Project Manager for

remediation of an 80-mile segment of the Kalamazoo River that is contaminated with PCBs; and Project Manager for preparing a preliminary design and construction cost estimates to evaluate a dredging project. Exhibit 1 at 2-3.[1]

Mr. King's expert report identifies and evaluates viable remediation alternatives that can be employed to mitigate or correct injuries resulting from Defendants' land disposal of poultry waste in the IRW. Defendants' Exhibit 2, p. 2. The objective of the report is to "identify cost-effective and environmentally prudent means of remediation that can be employed to reduce the State's injuries." *Id.* Mr. King's role was to develop a framework for developing remedial alternatives, screen out the alternatives that were not applicable and develop cost estimates for the remedial alternatives. Defendants' Exhibit 1, pp. 149, 158-59. Mr. King relied on the injury analysis conducted by the State's experts to identify injuries in the IRW[2] and coordinated with them to identify potential remedial alternatives. *See* Defendants' Exhibit 2, pp. 2, 4.

For his opinions in this case, Mr. King consulted with the state's injury experts, researched remedial options, reviewed underlying data, researched costs, and conducted peer-reviewed and published literature reviews to evaluate remedial activities. *See, e.g.*, Defendants'

[1] His experience also includes serving as Project Manager for a remedial investigation of groundwater contamination at a landfill; Project Manager for a remedial investigation and feasibility study of remedial alternatives to address soil and groundwater contamination at a former used oil facility; Project Manager for a remedial investigation of paper waste on an adjacent lake; and Project Manager for Responsible Party oversight of a groundwater cleanup of a 1-4, dioxane plume. *Id.* at 3-4. He has also worked on a number of hazardous waste, solid and industrial waste issues, including Project Manger overseeing a pump and treat groundwater system for trichloroethene plume; Manager in charge of remediation and design for a solvent contaminated site impacting soil and groundwater; a waste characterization for a chemical manufacturer; and evaluation and design of waste treatment systems. *Id.* at 5-7. He has also conducted number baseline environmental assessments; municipal wastewater treatment and disposal projects; and remediation at underground storage tank locations. *Id.* at 7-8.

[2] Mr. King relied on his own analysis of bacteria and nitrogen levels from samples collected by CDM to determine injury to groundwater. Defendants' Exhibit 1, p. 214; Defendants' Exhibit 2, p. 26.

Exhibit 1, pp. 18-19, 41, 44-51, 53, 114, 158, 161. The development of his report was guided by discussion with the State's experts on causation and injury including Dr. Roger Olsen, Dr. Bert Fisher, Dr. Dennis Cooke, Dr. Gene Welch, Dr. Scott Wells, Dr. Bernard Engel, Dr. Jan Stevenson, and Dr. Gordon Johnson. *See* Defendants' Exhibit 2, p.2. He also discussed the effectiveness of best management practices implemented in the region with Dan Butler and Shannon Phillips from the Oklahoma Conservation Commission. *Id.* His opinions are based on this work, as well as his engineering experience and technical knowledge. The information Mr. King relied on from the State's injury and causation expert is of the type that is typically relied on by experts in the field. Defendants' Exhibit 1, pp. 260-261.

The injuries Mr. King identified from this consultation are divided into three categories: (1) Human Health (Bacteria in the IRW rivers and streams, bacteria in groundwater, cyanobacteria in surface water, disinfection byproducts in drinking water, and taste and odor in drinking water); (2) Lake Tenkiller (Chlorophyll-a and blue-green algae dominance, transparency/water clarity, taste and odor, disinfection byproducts, habitat loss, water quality standard exceedences); and (3)Rivers and Streams (Biodiversity, blue-green algae, disinfection byproducts, algae, and water quality exceedences). Defendants' Exhibit 2, pp. 4-5.

The report developed remedial action objectives and remediation goals for three distinct components of the IRW, including the Watershed, the Riverine and Lake Tenkiller Response Regions. *Id*. at pp. 6-8. Remedial technologies were evaluated based on their potential to meet remedial action objectives and goals. *Id*. at p.10. Remedial options that were not expected to be effective or implementable in the IRW or were excessive in cost were analyzed and eliminated as potential remedial alternatives. *Id*. Technologies that were potentially effective and implementable, but require additional remedial investigations were identified, described and

listed in Section 5 of the Report. *Id*. Retained remedial technologies were evaluated against effectiveness, implementability and cost metrics and additional, more detailed evaluation were conducted. *Id*.

Thus, Mr. King's report provides the Court with an assessment of potential remedial actions to address injuries identified by the State's injury experts. It evaluates the universe of potential remedial activities in relation to their effectiveness, implementability, and cost.[3] *Id*. It further provides the Court with a detailed evaluation of potential remedial alternatives to address the State's injuries that meet the effectiveness, implementability and cost evaluation criteria. *Id*. at pp. 10, 22. This evaluation includes information on overall protection of human health and the environment; compliance with applicable legal requirements; long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost. *Id*. at pp. 22-23.

III. Legal Standard

The standard set by Rule 702 for expert testimony is:

> If scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact at issue, a witness qualified as an expert by knowledge, skill, experience, training or education may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

Fed. R. Evid. 702.

[3] Effectiveness is the ability of a technology to remove or address a target contaminant concern and the associated injuries. *Id*. at pp. 10-11. Implementability is the applicability of a technology to be installed or executed across the IRW and is used to screen out technologies that are not practically achievable. *Id*. at p. 11. Cost is used to eliminate those technologies that are extraordinarily expensive or similar in effectiveness and implementability, but substantially more costly than another technology addressing the same contaminant. *Id*.

The Tenth Circuit recognizes that expert testimony other than purely scientific testimony may assist the trier of fact and be admissible. For example, in *United States v. Fredette*, 315 F.3d 1235, 1240 (10th Cir. 2003), the Tenth Circuit acknowledged that under *Kumho Tire v. Carmichael*, 526 U.S. 141, 119 (1999), a district court "may focus upon personal knowledge or experience." The Tenth Circuit explained the proper test remains whether the testimony rests on a reliable foundation and is relevant to the task at hand. *Id*. at 1439. Judge Ralph Thompson, of the United States District Court for the Western District of Oklahoma, relied upon the *Kumho Tire* case when he wrote:

> the precise factors announced in *Daubert* need not be directly applied where the expert testimony does not involve scientific knowledge, and the court is to apply a flexible analysis to determine the relevance and reliability of the proposed testimony.

U.S. v. Austin Co., 2005 WL 6000505 (W.D. Okla. Sept. 29, 2005).

An Oklahoma Federal District Court has denied a *Daubert* challenge to a remedial plan far less detailed than Mr. King's work. In *Valley View Angus Ranch v. Duke Energy Field Services*, 2008 U.S. Dist. LEXIS 44181, at 23 (W.D. Okla. June 4, 2008), the Defendant challenged the reliability and admissibility of Plaintiff's expert's proposed cleanup plan which consisted of a "one-page list" of "recommended remedial actions" for lack of sufficient detail. The Court, in denying Defendants' motion, found that the lack of detail in the proposed remedial plan did not render it inadmissible under Fed. R. Evid. 702, but that any deficiencies go to the weight of the evidence and should be the subject of cross-examination. *See id*. at 26-27 *(citing Daubert,* 509 U.S. 579, 596; *Robinson v. Missouri Pacific RR Co.*, 16 F.3d 1083, 1090 (10th Cir. 1994). Here, Mr. King's expert report is a 36- page, detailed evaluation of remedial alternatives containing a 12 page appendix comparing effective and implementable remedies. Any criticism

of the "definitiveness" of Mr. King's recommendations does not render it inadmissible under Rule 702.

While disciplines such as engineering rest upon scientific knowledge, *Kumho Tire*, 526 U.S. at 148, the sort of environmental engineering used to examine remedial alternatives in pollution cases rests as much on "personal knowledge or experience" as upon scientific principles. The Court has Mr. King's personal experience in engineering environmental remedies to consider in determining if his work is reliable, and if it will help the Court as trier of fact.

Analyzing Mr. King's work, the Court will see that he looked at the harms and sources, and at the universe of established methods to address these harms using established methodologies to evaluate the alternatives. His evaluation was based upon peer reviewed scientific literature, discussion with other experts, and his own considerable experience. His work is reliable, and will be helpful to the Court as trier of fact.

IV. Argument and Authorities

A. Part of Mr. King's task was to evaluate and propose monitoring, investigation, assessment and feasibility analyses that the Court should order Defendants to perform

Defendants mischaracterize the nature, scope and purpose of Mr. King's expert report and misrepresent his deposition testimony. Motion at 4. Mr. King, in consultation with the State's other experts, offered opinions on the effectiveness, implementability and costs associated with the universe of remedial alternatives available to address injuries caused phosphorus and bacteria released by Defendants' land application of poultry waste in the IRW. Mr. King's report evaluates a broad range of remedial actions that could potentially address the

injuries identified by the State's experts in this case.[4] Mr. King's opinions relate to potential remedies, costs and investigations/assessments necessary to address injuries to the IRW. Contrary to Defendants' assertions, the State will not proffer Mr. King to opine on the issues of causation and injury. Other witnesses will testify to causation and injury, while Mr. King will testify as to potential remedies and costs, as well as investigations and assessments necessary to address injuries to the IRW. *See, e.g., Wilson v. Amoco Corp.*, 989 F.Supp.1159,1179 (D. Wyo. 1998) (Granting request for injunctive relief including investigation, monitoring and interim measures and reserving remedial orders for trial under RCRA).

Defendants' argue that Mr. King should have selected final remedial options and prepared something more definitive than cost estimates. The State did not ask this of Mr. King because the State is seeking injunctive relief and an order from the Court directing *Defendants* to conduct a monitoring, investigation, assessment and feasibility analysis of remedial alternatives to address the injuries caused by their waste disposal practices in the IRW. The State is further seeking injunctive relief from the Court requiring Defendants to implement interim measures and remedial alternatives that will reduce, and potentially eliminate in the future, the injuries caused by their waste disposal practices. Mr. King's evaluation and analysis will assist the Court in defining the scope of the monitoring, interim measures, investigation, assessment and feasibility

[4] In the Watershed area, remedial alternatives include cessation of land application, soil excavation, buffer strips, alum treatment of fields, lime treatment of fields, crop and nutrient management with nitrogen supplementation, residential drinking water treatment, residential supplied drinking water, residential replacement of wells, pump and treat groundwater, and retention/detention basins. Defendants' Exhibit 2, at 11-14. In the Riverine area, these include sediment removal, bank stabilization, constructed wetlands, alum treatments, lime treatments, drinking water treatment, impoundment of Lake Francis, and sediment capping. Id. at pp. 14-17 In the Lake Tenkiller area, these include lake sediment removal, complete mix aeration, bank stabilization, constructed wetlands, dilution and flushing, drinking water treatment, lake drawdown, alum treatments, lime treatments, hypolimnetic withdrawal, artificial circulation, food-web manipulations, copper sulfate algal control, layered aeration, and sediment capping. Id. at pp. 17-21.

study, as well as eventually select the appropriate remedial alternatives and is relevant to the issues in this case. It is not necessary at this stage for the final remedial alternatives to be identified and final costs to be determined.

Contrary to Defendants characterizations, *see* Motion, pp. 4-5, Mr. King can and does offer definitive opinions regarding remediation of the IRW. While Mr. King has not selected the final remedies, which is the province of the Court, he will offer definitive opinions on the cost, effectiveness and implementability of potential remedial alternatives and such opinions are reliable and relevant to the matters pending before this Court. *See* Defendants' Exhibit 2, pp. 10-36; Appendix 1-12; Defendants' Exhibit 1, pp. 264-66 (identified viable alternatives for Lake Tenkiller that should be assessed to select the best alternatives to address all remedies for the IRW); Id. at 164-65 (discussing additional remedies in Section 5 and recommending development of all technologies into a comprehensive alternative for a preferred remedy.).

B. Mr. King's report and opinions are certain and reliable

Despite the fact that Mr. King's report is 36 pages long, contains a 12 page Appendix, and provides detailed opinions on a broad range of remedial alternatives, Defendants assert that without basis that his analysis is full of data gaps, that he cannot render a definitive opinion and that his opinions are based on nothing more than "speculation as to things that *could* be done that *might* remedy Plaintiffs" alleged injuries." Motion at 10. In support of these assertions, they improperly mischaracterize the deposition testimony of Mr. King. For example, Defendants cite to page 166 of Mr. King's deposition for the proposition that his analysis is "full of numerous 'data gaps" and that "further analysis is necessary before he can render a definitive opinion." Motion at 10. However, Mr. King was actually testifying about only the Lake Tenkiller remedial alternatives that were in another section of his report from the buffer strips, and stated that there

were data gaps that need to be filled with regard to the effectiveness of these remedial alternatives "in terms of the phosphorus inputs" to Lake Tenkiller.[5] Defendants' Exhibit 1, p. 166.

The alternatives he is referencing are the ones listed in Section 5 of his report entitled "Actions requiring additional investigations and assessments" and include sediment removal, phosphorus inactivation with alum, and layered aeration. *See* Defendants' Exhibit 2, p. 32. As is plain from Mr. King's report, sediment removal was recommended for further investigation and assessment because the remedy will only be effective and implementable if the dredging removes the contaminant of concern and "new loadings to the waterway are reduced or eliminated from the tributaries to the lake or reservoir." *Id.* at 17. He further finds that the remedial alternative would not address continued inputs of phosphorus and organics from poultry waste and thus, the remedy "cannot be adequately evaluated until the final remedial measures for the watershed and riverine response regions have been identified in sufficient detail to determine future P and nutrient loading to Lake Tenkiller." Id. at 17-18; *see also, id.* at 19-20 (" . . . the [effectiveness] will be further reduced proportional to the additional P inputs from the Illinois River, Caney Creek and Baron Fork. Therefore, the applicability of P inactivation with alum cannot be adequately evaluated until the final remedial measures for the watershed and riverine response regions have been identified in sufficient detail to determine future P and nutrient loadings to Lake Tenkiller") & ("However, lake aeration would not address continual inputs of P into the IRW and may also stimulate more algal blooms (Cooke, et al., 2005). Therefore, this action requires additional investigation and assessment to determine optimum location of

[5] *See also* Defendants' Exhibit 1, pp. 264-66 wherein Mr. King testified about his comprehensive evaluation of alternatives for addressing injuries to the watershed and his identification of several viable remedies for Lake Tenkiller. He further testifies that the additional assessment work required could be part of a remedy fashioned by the Court. Id.

aeration devices, mixing zones of influence, aeration zones of influence, and potential stimulation of algal blooms").

The testimony cited by Defendants does not support their assertion that Mr. King "admits" his entire analysis is full of data gaps or that he must do additional analysis before he can render a definitive opinion on remedial alternatives. First, he is only referring data gaps with regard to three remedial alternatives he identified for further evaluations at Lake Tenkiller (not the thirty-one other remedial alternatives he evaluated for the IRW) and the "gaps" are the fact that the remedial alternatives will not work unless phosphorus loading from Defendants' waste disposal practices is reduced or eliminated. *Id.* at 17-20. Until it is clear that such loadings will in fact be reduced or eliminated in final remedial alternatives, it is not possible to determine whether dredging, layered aerations, and alum application will be effective. This "gaps" are created by Defendants continued release of phosphorus into the IRW and the fact that a final remedy is not yet selected. Such analysis underscores the reliability of Mr. King's opinions and do not indicate that he failed to conduct a thorough or reliable investigation of the alternatives. He definitively opines on the effectiveness and implementability of these remedial alternatives and concludes that they may not be effective if Defendants phosphorus loading to Lake Tenkiller is not reduced or eliminated. Further, Defendants failed to acknowledge that Mr. King definitively rejected eleven other remedial alternatives and retained one other alternative for detailed evaluation and cost estimates for the Lake Tenkiller Response Region. *Id.* at 17-21.

With regard to the other remedial alternatives, Mr. King evaluated cost, implementability, and effectiveness based on peer-reviewed articles, published articles, government reports, consultation with the State's other experts, and his engineering expertise in evaluating remedial options and developing remedial cost estimates. *See* Defendants' Exhibit 2, pp. 11-21. Based on

this analysis, he eliminated some remedial alternatives, identified some remedial alternatives that require further investigation and assessment, and retained some of the remedial options that met the criteria for more detailed evaluations. *Id.* at 10. For the remedial options retained, he applied seven additional criteria to analyze the remedial alternatives in greater detail, including protection of human health and the environment, compliance with legal requirements, long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment, short-term effectiveness, implementability, and cost estimates.[6] *Id*. at 22-23. Mr. King's opinions are clearly not based on nothing more than "speculation as to things that *could* be done that *might* remedy Plaintiffs alleged injuries" as Defendants assert and nothing cited in their Motion supports such a conclusion.[7]. *See* Motion at 10

Defendants also assert that Mr. King lacks the "experience and training necessary to qualify him to render opinions concerning the remediation of the alleged injuries in this case." Motion at 10-11. Despite the fact that Mr. King is a chemical and environmental engineer with over 22 years experience and worked on numerous cases involving feasibility studies, evaluation of remedial alternatives and development of cost estimates, Defendants argue that Mr. King has

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[6] Although Mr. King acknowledged that he did not compute an error rate for his cost estimates, he testified that the typical error rate for cost estimates in feasibility studies is minus 30 and plus 50 percent and that the error rate for that calculation is "right around that area." *See* Defendants' Exhibit 1, pp. 98-99. Mr. King's knowledge regarding the typical error rate is based on "experience and best professional judgment" and he testified that the cost estimating at this stage is important for "relative ranking because we're using these costs as one of the criteria, not the sole criteria. So it's important that the cost basis for each of the alternatives is consistent, not so much what the ultimate number … is." *Id.*

[7] Defendants simultaneously criticize Mr. King for not continuing to evaluate remedial alternative to reach "reliable opinions" after the report deadline and argue that any such work would be inadmissible. *See* Motion at 10 and fn. 7. Regardless, the deposition testimony they cite does not support their assertion that Mr. King testified that "[h]e has not continued to work toward finalizing his analysis to achieve reliable opinions . . ." Id. at 10. Mr. King simply stated that he was not working on a complete feasibility study at this time and that there were no discussions regarding conducted one. Defendants' Exhibit 1, pp. 169-70. Mr. King did not indicate such work was necessary for his opinions to be reliable. *Id.*

never worked on remediation of a watershed of this size based on Mr. King's deposition testimony at page 42. *Id.*; Exhibit 1, at 1-8; Defendants' Exhibit 1, p. 42 (testifying that remediation work in CERCLA cases is what he has done historically). While Defendants do not articulate how watershed size would affect Mr. King's analysis and opinions in this case, the deposition testimony actually states that watershed size of the Kalamazoo River remediation project "is . . .a little bit larger. It's almost one and a quarter million acres, but we worked on an 80-mile stretch of that river." Defendants' Exhibit 1, p. 42 (also testifying that the Kalamazoo River is a site on the Superfund list, includes 80 miles of river, and has multiple contributors). Defendants' assertion that Mr. King has never worked on remediating any issues relating animal manure is also unfounded. Motion at 10. While Mr. King testified that he had not worked specifically with runoff of nutrients from land application of poultry litter prior to this project, in his deposition, Mr. King testified that he worked with runoff of agricultural animal manure in the Rouge River project. Defendants' Exhibit 1, pp. 157-58. The only other criticism of Mr. King's qualifications relate to his knowledge regarding whether phosphorus or nitrogen are legally defined as hazardous substances under CERCLA. Motion at 11. The answer to this question is pending before the Court and it is not necessary for Mr. King to have an opinion on the subject in order to be qualified to evaluate remedial alternative to address the injuries in the IRW.

Defendants further challenge the reliability of Mr. King's testimony based on a mischaracterization of his deposition testimony regarding whether the remedial alternatives will be successful. Motion at 11. Defendants cite to pages 186-187 and 266 of Mr. King's deposition for the proposition, but fail explain his testimony clarifying the meaning of his responses. To clarify his previous answers, Mr. King testified that he had identified viable remedial alternatives for addressing injuries the IRW but in answering the original question he meant he had not

"developed a comprehensive remedy that results in remediation of all the injuries." Defendants' Exhibit 1, pp. 266-267. He further testified that all of the "alternatives that were retained or those alternatives that were retained with a note that additional data was required were deemed to be effective, otherwise, we wouldn't have retained them." *Id.* at pp. 269-270. The fact that it does not appear that alternatives exist to remediate all of the injuries caused by Defendants' waste disposal practices does not mean that the remedial alternatives identified by Mr. King are not effective for their intended purpose or that Mr. King is engaged in speculation.

Lastly, in support of their position that Mr. King's opinion are unreliable and uncertain, Defendants argue that Mr. King "states that if poultry litter continues to be used as fertilizer in the IRW, then his proposals will not be successful" and that "King's proposals are meaningless" unless the Court enters an Order prohibiting the use of poultry litter as fertilizer. Motion at 11. Mr. King actually states that "[i]n my opinion, the moratorium is necessary in order for these other remedial responses to be effective. In other words, without cessation, the -- there's going to be a limited effectiveness for the other remedial alternatives to have a meaningful impact." Defendants' Exhibit 1, p. 55-56. The fact that continued application of poultry waste in the IRW will cause pollution to such an extent that it will overwhelm the benefits associated with implementing any potential remedial alternative does not mean that Mr. King's proposals are meaningless or that Mr. King's opinions are unreliable. *See* Defendants' Exhibit 2, p. 10-11.

C. Mr. King's opinions regarding remediation of Lake Tenkiller are certain and reliable

Defendants complain that Mr. King's opinions regarding remediation of Lake Tenkiller are uncertain because he did not select a final remedial alternative and he relied on the work of other experts to determine whether remediation of the lake is necessary. Motion at 11. Mr. King evaluated 14 remedial alternatives for the Lake Tenkiller Response Region. Defendants' Exhibit

2, pp. 17-21. He rejected eleven alternatives, selected three for further investigation and assessment and retained one as meeting the criteria for retention and detailed evaluation. *Id.*

The "data gaps" referenced by Defendants are not truly data gaps at all, but are the result of the fact that these three remedial actions retained for further investigation won't be effective unless "new loadings to the waterway are reduced or eliminated from the tributaries to the lake or reservoir," and the remedy "cannot be adequately evaluated until the final remedial measures for the watershed and riverine response regions have been identified in sufficient detail to determine future P and nutrient loading to Lake Tenkiller." See supra, p. 12.

Further, the fact that Mr. King relies upon the work of the State's other experts to identify injuries requiring remediation in the IRW does not mean his opinions regarding remedial alternatives is uncertain or unreliable. He did not assume that remediation was necessary as Defendants argue and the deposition testimony cited does not support their argument. *See* Defendants' Exhibit 1, pp. 64-67. Mr. King clearly testified that he consulted with the State's expert on determining injury, causation and identifying remedial alternatives. *See id*. at 18-19, 24-29, 41, 44-56. This is confirmed by his report which describes his consultation with these experts to identify injuries, causation and trends. Defendants' Exhibit 2, p. 1. The fact that an expert relies on the work of other experts in forming his opinions does not mean that his opinions are inadmissible as long as they comply with Rule 703. *See Valley View*, 2008 U.S. Dist. LEXIS 44181, at 17-20.

D. Mr. King's opinions regarding private wells are relevant and reliable

After the initial evaluations of treatment of private groundwater wells, supply of drinking water, and replacement of groundwater wells, Mr. King determined that the technologies should be retained for further evaluation. Defendants' Exhibit 2, pp. 13-14. The detailed evaluation of

the residential groundwater wells considered sampling results for nitrogen concentrations and phosphorus in 60 domestic drinking water wells. *Id*. at 26. The analysis found that 13 percent of the wells had total nitrogen concentrations in excess of 10 mg/l, "indicating a potential exceedence of the nitrate maximum contaminant level for drinking water." *Id*. The analysis further found that bacteria was detected in 60 percent of the wells. *Id*. Based on this data and the total number of wells in Oklahoma, Mr. King estimated that 190 to 980 wells were "potentially impacted due to N or bacteria." *Id*. He did not find, as Defendants assert, *see* Motion p. 12," that there are 190 to 980 private wells within the IRW that need to be repaired or replaced." (Citing pp. 26-27 of King's Report).[8] Thus, the majority of their objections to Mr. King's analysis are unfounded based on Defendants' incorrect assertion that Mr. King concluded all of these wells need to be repaired or replaced.

Mr. King also evaluated remedial treatment technologies that are available for use to remediate "high nitrogen and bacteria levels" and identified reverse osmosis, ion exchange and ultraviolet treatment. Defendants' Exhibit 2, p. 27. Nitrogen can be removed through ion exchange or reverse osmosis and bacteria are destroyed through ultraviolet radiation. *Id*. Defendants do not challenge the effectiveness of these technologies, but contrary to Defendants' assertion, Mr. King did not testify reverse osmosis is only used as a water softener. *See* Defendants' Exhibit 1, pp. 111-112 (discussing use of ion exchange for water softening). He further developed cost estimates for treatment involving treatment for nitrogen only and for nitrogen and bacteria. Defendants' Exhibit 2, p. 27. His cost estimates utilized the estimated

[8] *See also* Defendants' Exhibit 1, pp. 268-69 (testifying that he would not knowingly say a non-contaminated well needed to be replaced, that he would not call it a data gap but rather he made an estimate based on extrapolation of the data, and that he typically does those types of estimates in remedial alternative analysis and it is a standard practice).

number of wells that could potentially be impacted by nitrogen or bacteria for the purpose of evaluating the potential remedy. *Id*. at Tables 4 and 5.

Mr. King assumes for the purpose of his analysis that bacteria in the groundwater wells are from poultry waste application, but will rely on other experts to establish causation. *See* Defendants' Exhibit 1, p. 226-228. While Defendants disagree with his conclusions regarding the effectiveness of cessation of land application in addressing bacteria levels in wells, his opinion is based on a published, peer-reviewed article, and Defendants cited no evidence to contradict his opinion in their Motion. Motion at 13; Defendants' Exhibit 2, pp. 26-27; Defendants' Exhibit 1, pp. 73, 281. Defendants cite to pages 294 and 295 of Mr. King's deposition for the proposition that he testified that if poultry waste application ceases 190 wells will need to be remediated or replaced and, if it does not, then 980 wells will need to be remediated or replaced. Motion at 13. However, they disregard the portion of his testimony that they are simply estimates of potentially impacted wells. Defendants' Exhibit 1, pp. 294-296;

Defendants advance a number of other arguments based on supposition that some of the wells in the IRW may not be operational or may not be used for drinking water. Motion at 14. Defendants also assert Mr. King should have used a different volume of water for calculating the costs of providing drinking water. *Id*. Defendants' disagreement with Mr. King on particular points may be appropriate for cross-examination, but those disagreements regarding his conclusions certainly do not prohibit him from testifying about various remedial alternatives available to address injuries from the Defendants' conduct, or the costs of such remedial alternatives and other issues that relate to his opinions remediation at trial. *See Palmer v. Asarco Inc*., 510 F. Supp. 2d 519, 525 ("Defendants can challenge [the expert's] conclusions through cross-examination, but this is not an appropriate subject for a *Daubert* challenge").

None of the arguments advanced by Defendants demonstrate that Mr. King's evaluation of remedial alternatives for groundwater water wells, including repair, replacement or alternative water supply are unreliable. While Mr. King provided cost estimates for a number of potentially impacted wells, he did not conclude that all of the wells had to be replaced or repaired. In fact, his cost estimates explicitly state that the costs of the technology will vary with the number of wells impacted. Defendants' Exhibit 2, p. 17.

E. Mr. King's opinions regarding buffer strips are reliable

Although Mr. King evaluates eight remedial alternatives for the Riverine Response Area and selected one remedial alternative for detailed evaluation and two alternatives for additional investigation and assessment, Defendants argue that Mr. King's "proposal for remediating the surface waters of the Illinois River and streams in the IRW is to purchase buffers strips and plant vegetation thereon." Motion at 15; Defendants' Exhibit 2, pp. 14-17. Buffer strips are not identified as a remedial alternative for the Riverine Response Area, but are part of the Watershed Response Region in which eleven remedial alternatives are evaluated, four are retained for detailed evaluation, and three are identified as requiring addition investigation and assessment. *Id*. at 11-14.

However, with regard to buffer strips, Defendants only challenge Mr. King's cost estimates for acquisition of easements and maintenance and do not challenge any other aspects of Mr. King's opinions on this issue. *See* Motion at 15-17. Defendants' criticisms of Mr. King's cost estimates are not well founded and do not form a proper basis for a *Daubert* challenge. Although Defendants perceive a weakness in Mr. King's choice of underlying data, such arguments should be the subject of cross-examination and go to weight and sufficiency of the evidence, as opposed to admissibility. *See Valley View*, 2008 U.S. Dist. LEXIS 44181, at 9-10

("[w]here an opposing party asserts perceived weaknesses in an expert's opinion, the testimony is nevertheless admissible and should instead be the subject of cross-examination.").

Defendants argue that Mr. King's cost estimates for land acquisition for riparian buffer easements are "grossly overstated" because they disagree with his figures for market price. *See* Motion at 16. Citing to a portion of their experts', Drs. Rausser and Dicks', unsigned report Defendants argue that Mr. King should have used an "average price per acre for marginal pastureland in the IRW ranges between $28 and $55 per acre." *Id*. However, as is clear from that report, those figures represent the annual rental rate for marginal pastureland per acre. Defendants' Exhibit 4, p. 66. As Defendants' acknowledge, Mr. King prepared cost estimates to purchase land, not rent it on an annual basis, thus these average rental rates are not an appropriate basis for preparing costs for land acquisition. *See* Motion, at p. 15; Defendants' Exhibit 2, Appendix pp. 3-4 (Tables 2-3). That Defendants' witnesses used a different approach is not a basis to exclude Mr. King's opinion, but presents a factual dispute to be resolved by the Court. Defendants advance additional arguments regarding their concerns that landowners won't participate, whether some parcels may have some buffer strips in place, and whether some of the fields may not have had poultry waste applied to them. Motion at 16. They do not provide any evidence that their concerns are justified.

Lastly, Defendants argue that Mr. King's opinions on buffer strips should be excluded under *Daubert* because "King cannot offer an opinion to assist the fact finder with regard to the purchase and maintenance of buffer strips because he cannot articulate a recommendation to the Court on this topic." Motion, at 17 (citing Defendants' Exhibit 1, p. 165 and alleging Mr. King Identified data gaps on this subject). Again, Defendants mischaracterize the purpose of Mr. King's opinions and his testimony on this subject. Mr. King identified buffer strips as an effective remedial alternative and set forth two options, one for all streams and one for third

order streams and higher. Defendant's Exhibit 1, pp.164-65; Defendants' Exhibit 2, pp. 24-26. Contrary to Defendants' statements, Mr. King can articulate recommendations to the Court on buffer strips and, in fact, he recommends that buffer strips, and other remedial alternatives, be developed into a comprehensive alternative for the preferred remedy. Defendant's Exhibit 1, pp. 164-65 (discussing additional remedies in Section 5 and recommending development of all technologies into a comprehensive alternative for a preferred remedy.).

Mr. King has prepared sound cost estimates for acquiring land for riparian buffer strips and to the extent Defendants perceive a weakness in his analysis, they may the proper subject of cross-examination.[9] However, the types of concerns raised by Defendants do not go to the admissibility of Mr. King's cost estimates. See *Valley View*, 2008 U.S. Dist. LEXIS 44181, 9-10. Further, Defendants have not challenged any of King's opinions on buffer strips regarding effectiveness; implementability; protection of human health and the environment; compliance with legal requirements; long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; and short-term effectiveness.

F. Mr. King's testimony about Disinfection Byproducts (DBPs) is reliable

Mr. King identified the presence of disinfection byproducts (DBPs) including trihalomethanes and haloacetic acids in drinking water as one of the Human Concerns and Health issues identified by the State's expert as an injury related to the land disposal of poultry waste. Defendants' Exhibit 2, p. 4. He did not assume DBPs are an issue as Defendants allege. Motion at 17, fn. 11. Mr. King discussed these issues with Dr. Cooke. Defendants' Exhibit 1, pp. 64-65. Dr. Cooke opines extensively about DBPs. *See, e.g.*, Ex. 2 (Cooke Dep., pp. 18, 153-61 & 176)

[9] Defendants also criticize King's estimate of maintenance costs arguing he has no scientific basis for his opinion. Motion, at 16-17. However, Mr. King testified that it would be a challenge to maintain buffers in the IRW because of the relatively thin soils and there are a variety of sources for his cost estimates on maintenance, including literature values. Defendants' Exhibit 1, pp. 106-109.

(testifying that DBPs are strongly associated with cancer and embryo toxic effects, there are exceedences in the IRW, and poultry waste in the IRW is a source of the DBP problem). Even Defendants' expert Dr. McGuire agrees that there have been DBP exceedences of the drinking water MCL standard in the IRW. Ex. 3 (McGuire Dep., p. 315) (testifying to DBP exceedences in the IRW).

Mr. King identified treatment of public water supplies as a remedial alternative warranting additional detailed evaluation for the Riverine and Lake Tenkiller response regions. Defendants' Exhibit 2, pp. 13, 18-19. In his detailed evaluation, Mr. King determined, based on U.S. Environmental Protection Agency Guidance, that the "formation of DBPs can be reduced by using enhanced coagulation, softening or granular activated carbon to remove these precursors" and that "[t]his is usually used in systems using conventional treatment." *Id*. at 30 (citing U.S. EPA Office of Water 2001).

He further determined that treating water supplies would protect human health by reducing the risk of human ingestion and that DBPs are considered probable human carcinogens by the US EPA; that remediation would comply with the applicable law; that it would be effective and permanent long-term with proper operation and maintenance; that the treatment would not address excess phosphorus in the IRW that is causing eutrophication, but that it would reduce the risk of ingestion of probable human carcinogens; and that it would not have a detrimental effect on human health and the environment; that the technology is implementable. *Id*. at 29-31. He then prepared cost estimates for implementing the treatment for fourteen water supplies using Lake Tenkiller as a water source and four water supplies using five water supplies using the Riverine area. *Id*. at 30-31.

Contrary to Defendants' assertion, Mr. King did not opine that all municipal water treatment facilities need to be upgraded to due to DBPs. Motion at 17; Defendants' Exhibit 1, pp. 193 (Q: So did you make a determination that a particular wastewater treatment plant needed remediation? A: Water treatment plant? Q: Right. A: No). Notably, immediately after asserting Mr. King opined all water treatment facilities required upgrading, Defendants assert that he calculated costs "without any regard for whether they needed upgrades." Motion at 12. Accordingly, most of Defendants' criticism of Mr. King's analysis requires no further discussion as he did not opine as described by Defendants and this assertion forms the basis of most of their objections. *See* Motion at 17-18.

As stated previously, the purpose of Mr. King's work was to identify potential remedial alternatives and provide preliminary cost estimates for implementation. He was not attempting to select a final remedy but to identify effective remedial alternatives, ineffective alternatives and alternatives requiring further evaluation. Defendants do not criticize Mr. King's conclusions regarding treatment technologies for DBPs or any other conclusions besides his cost estimates and their misstatement of his opinions regarding the need for upgrades.[10] With regard to Mr. King's cost estimates, while he made a calculation error in converting EPA estimates to estimates for the IRW and may have mistakenly applied population categories to four of the utilities, this does not render his opinions of the effectiveness of drinking water treatment for addressing DBPs unreliable as the cost estimates are just that – estimates – and were never intended to be final cost calculations. *See* Defendants' Exhibit 1, p. 99 (agreeing that the

[10] While Defendants argue that Mr. King is not qualified to render opinions on DBP issues, their argument ignores that Mr. King has 22 years experience evaluating a broad range of remedial alternatives and that he undertook his work in consultation with the State's experts, Dr. Cooke and Dr. Olsen, and relied on information from the USEPA for the existence and effectiveness of treatment technologies. *See* Defendants' Exhibit 2, pp. 2, 30.

summary of costs for the remedial alternatives were not intended to be a final cost estimate). Mr. King's other opinions with regard to DBPs are not effected by any error in the cost estimates.

Mr. King's opinions on DBPs as a potential remedial alternative are relevant and reliable. He clearly offers specialized knowledge from based on his 22 years experience as engineer and extensive experience evaluating remedial alternatives and development of cost estimates that will assist the trier of fact in understanding the availability and effectiveness remedial alternatives to addressing DBPs in drinking water. *See* Fed. R. Evid. 702.

G. Mr. King's opinion concerning poultry waste landfills

The primary remedial alternative recommended by Mr. King is the cessation of the land application of poultry waste within the IRW. *See* Defendants' Exhibit 2, pp. 23-24. As Mr. King explained during his deposition, his analysis in arriving at this recommendation was sound, well-supported and eminently reasonable:

> "Well, based on the conceptual site model for the site, the historic practice of land applying poultry waste has resulted in an increase in the amount of phosphorus relative to the amount of nitrogen required for agronomic purposes, so that there's an excess of phosphorus in the soils and well beyond what the agronomic need is, and to continue to apply poultry waste is going to exacerbate that problem."

Defendant's Ex.1, p. 58. As he further explained in his Report:

> "The ability and effectiveness of all of the remedial options to reduce N, P and bacterial loadings will be impaired without the cessation of land application of poultry waste within the IRW. Without cessation, the loading of P to the rivers, streams and Lake Tenkiller will likely increase over the next 30 years based on the IRW watershed-wide model (B. Engel, 2008)."

Defendants' Exhibit 2, p. 23.

Rather than attacking Mr. King's core, substantive recommendation concerning the cessation of land application, Defendants instead attack Mr. King's cost estimate concerning the potential hauling of poultry waste to a landfill. Motion at 20. Defendants go so far as to claim

that Mr. King has "propos[ed]" that the poultry growers haul their poultry waste to a landfill. *Id.* However, one need only look at Mr. King's Report to see that: (1) he presents the landfill alternative as dependent upon *Defendants'* choice of a removal technology; and (2) the landfill cost estimate was based upon data from *Defendants'* own experts. Defendants' Exhibit 2, p. 23-24; Table 1 (citing Rausser and Dicks). Defendants also chide Mr. King for assuming that all the poultry growers would willingly provide the poultry waste for transport to a landfill. Motion at 20. But, when adequately motivated, Defendants have shown themselves to be remarkably effective in influencing the "voluntary" land application practices of their growers. *See* Dkt. 2070-10 (Tolbert P.I. Test., pp. 94-95); Dkt. #2070-11 (*City of Tulsa* Consent Decree at pp. 8-9).

Cessation of land application is the surest way to curtail the continuing damage that these Defendants are causing in the watershed, and it is a well-supported remedial alternative for the Court to consider. The landfill option is a potential alternative for the waste identified by Defendants. Mr. King's opinion concerning the landfill option is not a mere layman's opinion as Defendants assert. It is part of a highly experienced environmental engineer's analysis in considering the available scientific evidence of environmental damage, causation and potential remedial alternatives. Such an opinion would assist the Court at the remedy stage in conducting its own remedial analysis. There is no basis to preclude Mr. King's opinion in this regard.

H. It is appropriate for Mr. King to rely on the State's causation experts to determine what remedies to consider

An expert may properly rely on the opinion of another expert. *Concerned Area Residents for the Environment v. Southview Farm,* 834 F.Supp. 1422, 1436 (W.D.N.Y.1993), *rev'd on other grounds by* 34 F.3d 114 (2d Cir.1994); *Eclipse Elecs. v. Chubb Corp.*, 176 F.Supp.2d 406, 412 (E.D. Pa.2001); *Taylor, Bean & Whitaker Mortgage Corp. v. GMAC Mortgage Corp.*, 2008

WL 3819752, *2 (M.D. Fla. Aug. 12, 2008). The judicial inquiry is whether the first expert's opinion is "of a type reasonably relied upon by experts in the particular field." Fed. R. Evid. 703. In determining whether an expert based his opinion upon relevant and reliable data, "deference ought to be accorded to the expert's view that experts in his field reasonably rely on such sources of information." *Greenwood Utils. Comm'n v. Mississippi Power Co.*, 751 F.2d 1484, 1495 (5th Cir. 1985) (citation omitted).

It is common in the remedial alternative analysis context for environmental engineers to rely upon the work of other experts (i.e., the opinions are of the type reasonably relied upon by those in the environmental engineering field). As Mr. King testified:

> Q Okay, but did you actually conduct any part of the field investigation?
> A No. I was not part of the field team, but *that's not uncommon for this type of assignment.*
> Q In your experience when conducting a remedial alternative analysis, what are some of the types of materials you typically rely on?
> A Well, in addition to the literature search, past experience, things like preexisting reports, remedial investigations, summary reports, risk assessments, things along those lines, but *there's a variety of work products that all feed into remedial alternatives evaluation.*
> Q *Is it common to rely on the work of other experts when conducting a remedial alternative analysis?*
> A *Yes. I mean, you are always relying on a wide variety of input.*
> Q And is that what you did here?
> A Yes.

Defendants' Exhibit 1, at 260-61. Here, Mr. King used the opinions of other experts -- and a variety of other sources of information -- to assist him in evaluating potential remedial alternatives. It was the job of the State's causation and injury experts -- such as Drs. Fisher, Engel and Cooke -- to investigate and opine concerning environmental damage in the IRW and the sources of contamination. It was Mr. King's job to take the causation and injury data and analysis provided and evaluate remedial alternatives. Plainly, the work product relied upon by Mr. King here -- including the opinions and analysis of other experts -- is of a type reasonably

relied upon by environmental engineers when conducting remedial alternative evaluations. And Mr. King is not merely "parroting" the other experts as Defendants assert. He is using their injury analysis --including modeling work -- as a basis for selecting and rejecting possible remedial alternatives. Such methodology is entirely proper and standard. Defendants' arguments are without merit.

V. Conclusion

WHEREFORE, in light of the foregoing, "Defendants' Motion to Exclude the Testimony of Todd King Pursuant to *Daubert v. Merrell Dow Pharmaceuticals, Inc.* [DKT #2068]" should be denied in its entirety.

Respectfully Submitted,

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